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ROYAL BOTANIC GARDENS, KEW

LII.—INDEX LONDINENSIS TO ILLUSTRATIONS OF FLOWERING PLANTS, FERNS AND FERN-ALLIES.

In 1855 Dr. G. A. Pritzel, who was keeper of the Royal Library at Berlin, brought out his well-known work, the " Iconum Botanicarum Index Locupletissimus," being what was then regarded as an exhaustive register of all known illustrations of Phanerogams and Vascular Cryptogams, chiefly from the time of Linnaeus onwards.

The botanical and horticultural worlds are this year able to welcome (what has been long overdue) the publication of the first volume of an emended and enlarged edition of Pritzel's work, under the title of " Index Londinensis to Illustrations of Flowering Plants, Ferns and Fern-Allies." The editor of this important work is Dr. Otto Stapf, F.R.S.

About 20 years ago the necessity of preparing a new edition of " Pritzel " became not only obvious, but urgent. The Council of the Royal Horticultural Society and Sir David Prain, the then Director of the Royal Botanic Gardens, Kew, made an unsuccessful appeal for the necessary funds. However, in 1912 the sum of £250, from the profits of the International Horticultural Exhibition at Chelsea, formed the nucleus of a fund which made possible the commencement of the work. About the year 1917 the Royal Horticultural Society began the task of organising the great undertaking which a revision of " Pritzel " would naturally entail, and guaranteed the cost of the compilation; at the same time the Society received grateful help from contributors interested in the work. Two Committees were constituted to draw up a code of recommendations, as a result of which an Honorary Editor was appointed, and the work was started in July 1918 at the Kew Herbarium and Library, where the Director granted the use of a room and placed the resources of the library at the disposal of the staff.

By the summer of 1927 a prospectus and proof-page of the new Index were issued. At the same time negotiations were carried on with the Delegates of the Clarendon Press, Oxford, for the printing of the work. In the summer of 1928 the card MS. of the first volume, comprising nearly 84,000 references to illustrations in various books and periodicals from all over the world, was in the hands of the printers. When the remaining five volumes are published the total number of entries will amount to nearly half a million.

As there were about 107,000 references in Pritzel's old Index, the additional 380,000 consist of those which were omitted by him and, in addition, the references to the pictorial literature published since 1865, the date of issue of the supplement to " Pritzel." This will give some idea of the very extensive scope of the work. The references are from all publications of post-Linnean date, i.e., from the year 1753, and extend as far as the year 1920 inclusive.[1] Owing, however, to the high quality of the pictures in certain books of pre-Linnean date, such as Rumphius' " Herbarium Amboinense " (1741) and Rheede's " Hortus Malabaricus " (1686), these have been taken up, but not without the aid of certain modern commentaries on those works.

The citations in the new Index are of illustrations of Phanerogams, Ferns and Fern-allies, the lower Cryptogams being excluded. They represent " portraits " of plants showing the habit and of detached portions of a plant, and of such details as help to indicate the morphology of the various parts. But anatomical structures and fossil plants are excluded. Although pictures of teratological forms (" sports " and " monstrosities ") are not, as a rule, admitted, they nevertheless very frequently occur, as no sharp line can possibly be drawn between normal and abnormal structures.

No distinction is made between illustrations of species, sub-species, varieties or hybrids, so long as they are accompanied by scientific names, figures having only a generic name are not indexed. Not more than four names (including the generic one) are used, e.g., *Acer pseudoplatanus quinquelobum clausum.* The spelling of plant-names is in accord with the Latin as taught in modern schools, but *uniformity* is sought throughout, e.g., of the two forms " *ceylanica* " and " *zeylanica,*" the former is always used, but the latter is given in a cross-reference. The authors of plant names have been quoted throughout, but absolute exactitude in all cases cannot be guaranteed, especially as regards the authors of varietal names. Certain symbols are used, e.g., an * to denote a picture wholly or in part coloured, an ! to signify a " sport," and a x for a hybrid. The sequence is alphabetical for the generic and specific names and the minor grades, but is chronological for the references. In the matter of cross-references, it should be said in the first place that, as regards species, the names under illustrations are simply registered as they are found, no attempt being made to correct inaccuracies when such occur, except when they are obviously due to inadvertent slips.

When, however, as sometimes happens, these names are at variance with those which occur in the text, this fact is mentioned in the reference, and cross-references are introduced under the respective quotations. As regards *genera,* species are often put under generic names with which they have long ceased to be connected ; a system of cross-referencing has therefore been devised

[1] For example, there are 153 references to illustrations of the Common Daisy.

based on Dalla Torre and Harms' "Genera Siphonogamarum" (1900–07), or, where this is out of date, on modern monographs or on the Editor's personal knowledge.

The Preface, by the President of the Royal Horticultural Society, is in English and Latin. The Editor's Introduction, giving a brief sketch of Pritzel's life and an account of the scope of the whole work, is in English only. The Key to the use of the Index, on account of its great importance, has been printed in English, French and German. This is followed by a list of subscribers.

Volume I consists of 547 quarto pages and contains references to illustrations from *Aa* to *Campanopsis*, the letter C being thus split up between Volumes I and II. Five more volumes will appear in due course. The price of the work is £5 5s. per volume.

No one who has not been actually engaged in the task can adequately realise the enormous amount of work and thought which the production of the MS. of the Index entails. The Delegates to the Clarendon Press are to be congratulated on the admirable way in which it is being printed. While the Index may hardly be as useful to gardeners as would seem to have been at first surmised by its promoters, it will be of immense value to the editors of Horticultural journals, to Universities, and in Botanical libraries throughout the world.

If, henceforward, the student in botany or horticulture finds the task of turning up pictures of any particular plant or plants much more easy than he ever did before, it will be due to the facilities provided by the "Index Londinensis," thanks to the wisdom and generosity of the Royal Horticultural Society.

W. C. W.

LIII.—SOME INTERESTING ERIAS FROM BURMA.

V. S. Summerhayes.

Eria decipiens *Summerhayes*, sp. nov.—*E. extinctoria* Oliver, Bot. Mag., t. 5910 (1871), quoad ic. et desc. tantum, non *Dendrobium extinctorium* Lindl.

A comparison of a flower from the type specimen of Lindley's *Dendrobium extinctorium* with the plant figured in Bot. Mag. t. 5910 under the name *Eria extinctoria* Oliver, based on *D. extinctorium* Lindl., shows that another species has been figured by mistake. There are two main features in which the two differ. Firstly, the drawing (unfortunately there are no specimens preserved) shows the dorsal sepal to be constantly 8 mm. long, while it is stated in the description that the flowers are from one-half to two-thirds of an inch long. The type of *D. extinctorium* Lindl. (consequently also of *E. extinctoria* Oliver, as to combination only) has the dorsal sepal only 4 mm. long, and this is also the case with other undoubted specimens of *E. extinctoria* in the Kew collections. The flowers also are just under half an inch in length. Secondly, the two plants differ in the shape of the lip, *E. extinctoria* having the middle lobe

short and broad and overlapping the side lobes, which are relatively large. The plant in Bot. Mag. t. 5910 has a middle lobe with each lobule larger than the side lobe and not at all overlapping. It also has three prominent lines of hairs on the disc whereas in *E. extinctoria* these are hardly distinguishable.

I have therefore restricted the name *Eria extinctoria* to the species first described as *Dendrobium extinctorium* by Lindley, and separate the Bot. Mag. plant as a distinct species under the name *E. decipiens* in allusion to the deceptive resemblance it bears to the other species.

Two other species belonging to this group of *Eria* have been discovered in the same part of Burma and are represented in the Kew Herbarium. Both come from the Dawna Hills at considerable altitudes, and there seems no doubt that this is the centre of distribution of this very interesting group of small epiphytes.

Eria Lacei *Summerhayes*, sp. nov. ; affinis *E. decipienti* Summerhayes, sed caulibus bifloris, labelli lobo intermedio integro angustiore satis distincta.

Planta humilis, epiphytica, aphylla ; pseudobulbi aggregati, subglobosi, apice depressi, siccitate valde et acute plicati, 5–10 mm. diametro. *Scapus* terminalis, saepius biflorus, usque 5 cm. altus, gracilis, glaber, inferne cataphyllo singulo vaginante acuto instructus ; bracteae ovatae, acutae, membranaceae, 2–3 mm. longae ; pedicelli cum ovario 9–13 mm. longi. *Sepalum* dorsale lanceolatum, subacutum, 7–8 mm. longum, 2·5 mm. latum, concavum ; sepala lateralia oblique triangularia, acuta, latere breviore 8–9 mm. longa ; mentum 4–5 mm. longum. *Petala* oblonga, obtusa, 6–7 mm. longa, 2·5 mm. lata ; sepala et petala omnia quinquenervia. *Labellum* ex ungue brevi sensim dilatatum, superne trilobum ; lobi laterales breves, rotundati ; lobus intermedius fere orbicularis, antice paulo crenulatus, 3·5–4·5 mm. longus, 4–5 mm. latus ; labellum 10–12 mm. longum, 6·5 mm. latum, disco lineis tribus pilorum instructo. *Columna* brevissima, compressa.

Amherst District. Near Lampa Chaung, Dawna Range, 3500 ft., March, 1909, *Lace* 4751.

Eria conica *Summerhayes*, sp. nov. ; affinis *E. extinctoriae* Oliver a qua scapo 1–4-floro, floribus majoribus, labello longiore lobo intermedio triangulari apiculato differt.

Planta nana, epiphytica, aphylla ; pseudobulbi (e tabula photographica solum cogniti) iis *E. extinctoriae* similes, brunnei. *Scapus* laxe 1–4-florus, strictus, usque 5 cm. altus, gracilis, teres, glaber, inferne cataphyllo singulo acuto basi vaginante instructus ; bracteae ovatae, acutae, 2–3 mm. longae, infima saepius basi vaginante. *Flores* horizontales ; pedicelli suberecti, cum ovario 1·3–2 cm. longi. *Sepalum* dorsale lanceolatum, subacutum, 6–7 mm. longum, 2·5–3 mm. latum ; sepala lateralia oblique triangularia, acuta, latere breviore 7 mm. longa, mentum strictum subconicum obtusum

7 mm. longum formantia. *Petala* elliptico-ovata, acuta, 6 mm. longa, 3·5 mm. lata. *Labellum* basi cuneatum, apice trilobum, 14–15 mm. longum, 6·5 mm. latum; lobi laterales brevissimi, rotundati; lobus intermedius anguste triangularis, apice apiculatus, carnosus, 3·5 mm. longus, basi 2·5 mm. latus, calvus. *Columna* brevissima, antice valde concava; anthera cylindrico-conica.

Amherst District. Misty Hollow, Dawna Hills, 2400 ft., Feb., 1927, *Parkinson* 5288. "Flowers white with faint pink stripes running down the perianth segments."

This species is remarkable for the several-flowered scapes and long conical mentum. In general vegetative characters it agrees well with the other species already mentioned.

LIV.—THE AUSTRALIAN SPECIES OF LONCHOCARPUS AND DERRIS.

C. T. White.

I recently received an enquiry from the Australian Council for Scientific and Industrial Research regarding the occurrence in Australia of plants of the genera *Derris*, *Tephrosia* and *Lonchocarpus* respectively. On looking up the literature and specimens at my disposal I found that there had been some confusion regarding the species of *Derris* and *Lonchocarpus*, and a summary of the Australian species is therefore offered herewith.

A peculiar case is that of *Lonchocarpus nesiotes*: this was named by F. M. Bailey in 1906 from two distinct specimens—one from Percy Islands (Tryon and Young) and one from the Bloomfield River (W. Poland). The latter specimens were afterwards placed by Domin (1926) under *Derris*. Both specimens are rather fragmentary but the Percy Island one is, I think, referable to the common *L. Blackii* Benth. The Bloomfield River ones were evidently collected from two distinct plants, the leaves and flowers representing *Lonchocarpus Blackii* Benth., and the pods a species of *Derris*, most likely *D. trifoliata* Lour. var. *macrocarpa* Domin.

Lonchocarpus *H. B. et K.*

Lonchocarpus Blackii *F. Muell.* Fragm. Phytogr. Austr. ii. 123 (1861). *Lonchocarpus nesiotes* F. M. Bailey in Queensl. Agric. Journ. xvii. 162 (1906), in part.

Endemic in Australia. Common in north-eastern New South Wales and along nearly the whole coast of Queensland as far north as the Bloomfield River (lat. 16° S.).

Derris *Lour.*

1. **Derris involuta** *Sprague* in Gard. Chron. ser. 3. xxxviii. 3 (1905), and in Kew Bull. 1914, 230. *Derris scandens* auct. plurim. austral., vix *Dalbergia scandens* Roxb. *Wistaria involuta* Sprague in Gard. Chron. ser. 3. xxxvi. 141 (1904). *Derris oligosperma* W. G. Craib in Bot. Mag. t. 8530 (1913), non K. Schum. et Lauterb.

Endemic in Australia; common in north-eastern New South Wales and south-eastern Queensland. Our northernmost record in a big series of specimens is Kin Kin, Wide Bay district, about 26° 30′ S. lat.

Domin (Beitr. Fl. & Pflanzengeog. Austral. in Bibliotheca Botanica, 89, iii. 1926) records *D. scandens* from Tambourine Mountain, and speaks of it as fairly common in southern Queensland and northern New South Wales. I have not seen his specimens but should say they were undoubtedly referable to *D. involuta* Sprague. He records *D. involuta* Sprague from Cairns (about 17° S. lat.) but what these are I cannot say.

2. **Derris trifoliata** *Lour.* Fl. Cochinch. 433 (1790), var. **macrocarpa** *Domin* in Bibliotheca Botanica, 89. iii. 786 (1926). *D. uliginosa* auct. plurim. austral., non Benth. *Lonchocarpus nesiotes* F. M. Bailey in Queensl. Agric. Journ. xvii. 162 (1906), in part.

Widely spread over the tropics of the Eastern Hemisphere. It is very common in north-eastern Queensland from Mackay (about 21° S. lat.) northwards. All our specimens in fruit bear oblong, usually 2-seeded pods, so it is possible that all the Queensland plants represent Domin's variety.

3. **Derris koolgibberah** *F. M. Bailey* in Rept. Govt. Sci. Exped. Bellenden-Ker, 38 (1889).

Endemic in Queensland; so far as known, restricted to the country between the Mulgrave River and Cairns (about 17° S. lat.).

LV.—CONTRIBUTIONS TO THE FLORA OF BURMA: VIII*.

C. E. C. Fischer.

Mitrephora lophophora *C. E. C. Fischer* [Anonaceae]; *M. Maingayi* Hook. f. & T. affinis, foliis acuminatis nervis supra haud impressis, petalis externis elliptico-oblongis acutis marginibus integris, ovario 6-ovulato, stylis longis differt.

Tree; stem grey; branchlets brown, furrowed, glabrous, dotted with small, round or elliptic lenticels; youngest twigs fulvous-tomentose. *Leaves* chartaceous, elliptic to elliptic-lanceolate, apex bluntly acuminate, base narrowed, 7–13 cm. long, 2·25–5 cm. wide, glabrous and shining above, initially densely fulvous-silky-tomentose below becoming quite glabrous but minutely scaly, midrib and 6–8 pairs of arched primary nerves prominent below; petioles shallowly channelled above, dark, transversely rugulose, 5–11 mm. long. *Inflorescence* of few-flowered (only 1 expanding at a time) racemes terminating short lateral shoots; peduncles and pedicels densely rufous-tomentose; pedicels 1–1·5 cm. long, bearing a median or submedian broadly ovate, semiamplexicaul bract, glabrous above, densely rufous-tomentose below. *Sepals* very shortly united at the base, hemispheric, apex bluntly apiculate, 5 mm. long, glabrous

*Continued from *K.B.* 1929, p. 207.

within, densely rufous-tomentose without. *Outer petals* broadly oblong-elliptic, acute, 2·2–2·4 cm. long, 1·3–1·5 cm. wide, rather densely grey or rufous-hairy without, sparsely grey-hairy or glabrous within, many-veined ; inner petals 1·5–1·6 cm. long, blade broadly cordate, subacute with a ligulate claw as long, claw and blade without pubescence, blade within bearing a dense brush of matted mole-coloured (when dry) hairs. *Stamens* numerous, 1 mm. long. *Ovaries* about 20, 1 mm. long, compressed ellipsoid, setose ; ovules 6 in 2 rows ; style oblong or subclavate, slightly compressed, as long as the ovary, glabrous. *Fruit* not seen.

Mergui, 10 miles from Victoria Point, 1050 ft., flowers March, *Sukoe* per *C. E. Parkinson* 7701, " Flowers light yellowish with a pinkish line."

Polyalthia lateriflora *King* [Anonaceae].

Known from the Malay Peninsula.

Mergui, Baukachon, 900 ft., flowers Dec., *Sukoe* per *C. E. Parkinson* 6233, " Tree ; flowers greenish ; stem grey, terete."

Viola biflora *Linn.* var. **acuminata** *Maxim.* [Violaceae].

Namkin Mountains, Seingkhu Wang, 7000 ft., flowers May, *Kingdon Ward* 6770, " Flowers bright yellow, lower petal darkly herring-boned with black-purple, a few lines on the other petals also. In alder copse in the stony river-bed."

Viola moupinensis *Franch.* [Violaceae].

Known from China and Assam.

Namkin Mountains, Seingkhu Wang, 10000 ft., flowers June, *Kingdon Ward* 6847, " Flowers violet. On stony moraine-like earth banks on the sides of the glen."

Viola sikkimensis *W. Becker* [Violaceae].

Known from Sikkim, Assam, China and Sumatra.

Namkin Mountains, Seingkhu Wang, 5000 ft., flowers May, *Kingdon Ward* 6726, " Flowers white, more or less streaked with violet. On shaded banks in forest."

Viola Thomsoni *Oudem.* [Violaceae].

Known from Sikkim.

Namkin Mountains, Nogmung, 2000–4000 ft., April, *Kingdon Ward* 6650, 6669, " Flowers pure white with a few purple guide lines. In colonies on shaded earth banks."

Glycosmis Winitii *Craib* [Rutaceae].

Known from Siam.

Mergui, Tenasserim River, *R. N. Parker* 2461, " Small tree, bark nearly smooth, a thin corky layer and then bright green inner bark with light brown streaks, leaflets 6–8."

Barringtonia Kermodei *C. E. C. Fischer* [Lecythidaceae] ; *B. acutangulae* Gaertn. affinis, pedicellis floribusque majoribus, receptaculo quadrangulato, ovario 3-loculari differt.

Tree, 20–30 ft. high ; twigs thick, greyish-brown, furrowed when dry, glabrous ; innovations puberulous. *Leaves* subcoriaceous, obovate, apex rounded, base gradually attenuate, 13–17 cm. long, 3–8·5 cm. wide, quite glabrous, midrib thick, prominent below, primary nerves 6–8 pairs, raised below, regular, arched and anastomosing near the margin, usually running upwards parallel with the midrib for 2–5 mm. and then bent abruptly outwards, ultimate reticulations fine and distinct on both surfaces, margins entire near the base elsewhere denticulate-crenate, petioles short, channelled above. *Inflorescence* in racemes up to 40 cm. long from the extremities of the old twigs ; rhachis angled when dry, flowers numerous, about 1 cm. long ; pedicels thickened upwards, 0·6–1 cm. long ; bracts deciduous (not seen). *Receptacle* funnel-shaped, quadrangular in section, 5 mm. long. *Calyx* tube very short, lobes 4, broadly triangular, rounded, unequal, 2–2·5 mm. long, minutely ciliate. *Petals* 4, suborbicular from a broad base, concave, 6–7 mm. long. *Stamens* very many ; filaments filiform, longer than the petals, united below to form a short ring. *Ovary* enclosed in the receptacle, crown flat, 3-celled; ovules 2 in each cell, pendulous ; style terete, as long as the petals. *Fruit* not seen.

Bassein District, near Bawmi, sea-level, Feb., *C. W. D. Kermode* 7190, " flowers dark-red." Vernacular name : *Kye*.

Anplectrum barbatum *Triana ex C. B. Clarke* (Melastomataceae).

The species was so named by " Triana in Trans. Linn. Soc. xxviii. 84 based on sheet No. 4082 of the Wallich Collection, named *Melastoma barbatum*." As no description accompanied the citation, the first valid publication was that of C. B. Clarke in the Fl. Br. India ii. 546, where it was placed under the doubtful species. The Wallichian specimens, which were collected on Chappedong Hill in Martaban on 23. ii. 1827, consist of twigs with a few leaves but present neither inflorescence, flowers nor fruit and no other specimens have been attributed to the species since then until Professor W. G. Craib pointed out that certain recent Siamese and Burmese collections allocated to *A. glaucum* Triana, a Penang plant, were probably this species. This led to the examination of all the Burmese specimens in Kew Herbarium, and to the conclusion that at present *A. glaucum* Triana is not represented from Burma at all. The fact that the specimens hitherto accredited to the last-named species, including those cited by C. B. Clarke (Fl. Br. Ind. ii. 545), are really *A. barbatum* Triana is not left in doubt owing to the presence of the peculiar stellate-puberulous bristles on the upper side of the petioles and the abruptly acuminate leaves. *A. cyanocarpa* Kurz (non Triana) Journ. As. Soc. Beng. xlvi. 78 and For. Fl. Br. Burm. i. 508, is also this species. The two species differ by the following characters :—

A. glaucum : *Leaves* gradually acuminate, base shallowly cordate. *Petioles* with slender, naked bristles above. *Buds* acutely acuminate.

Petals lanceolate, caudate-acuminate. *Staminodes* at most 2, connective erect, subtrilobed, margins irregularly dentate, devoid of processes.

A. barbatum: *Leaves* abruptly acuminate, base rounded or subtruncate. *Petioles* with thick, stellate-pubescent bristles above. *Buds* blunt or subacute, not at all acuminate. *Petals* ovate, subacute. *Staminodes* 4, connective descending, triangular, apex bifid, margins entire, with 2 slender, vertical horns.

In view of the meagre description, lacking all mention of inflorescence or fruit, an amplified one is appended, based on all the specimens quoted below.

A climbing or twining *shrub*; branches terete, glabrous, often hollow, often bearing aerial roots, nodes more or less swollen and with a stipular ridge; youngest twigs solid, minutely stellate-puberulous, more densely so at the nodes. *Leaves* chartaceous, ovate to elliptic-lanceolate, apex bluntly rather abruptly acuminate, base in the broadest leaves subtruncate, the narrowest somewhat narrowed to the rounded base, 7–17 cm. long, 2·5–8 cm. wide, 3-ribbed from the base with a more slender nerve on either side close to the entire margin, the 2 lateral ribs continuous to the apex, the ribs and sometimes the marginal nerves slightly impressed above and prominent below, secondary nerves transverse, regular, parallel, nearly horizontal, with finely reticulate veins between, both surfaces of the blade minutely stellate-puberulous, ultimately glabrous; petioles 0·7–1·5 cm. long, minutely furfuraceously stellate-puberulous, usually with a brush of furfuraceously whitish stellate-puberulous bristles on the upper side. *Panicles* lax, terminal and in the upper axils, up to 12 cm. long, rhachis and its branches minutely rusty or whitish stellate-puberulous, ultimate divisions 3-flowered, the central flower with an inarticulate pedicel 5–6 mm. long, the lateral with much shorter pedicel articulated near the base; bracts caducous (not seen); bracteoles 2, opposite, ligulate, rounded, 3 mm. long, minutely stellate-puberulous on both faces, margins ciliate with long and very short stellate-puberulous setae. *Buds* ellipsoid, blunt or subacute, not acuminate. *Calyx* urceolate, 6 mm. long, minutely rusty stellate-puberulous becoming almost glabrous in fruit, mouth truncate, margin slightly widened. *Disk* lining the calyx to within 5 mm. of the mouth, thickened at 4 equal intervals to seat the petals and stamens. *Petals* 4, ovate, subacute, inequilateral, 8–9 mm. long, glabrous, mauve or violet. *Stamens* 8, alternately perfect and imperfect, the latter very rarely reduced to 2, all inflexed in bud with the anthers lodged in cavities between the disk and the ovary, quite glabrous; filaments fleshy, ligulate, up to 4 mm. long, those of the imperfect ones smaller, perfect anthers sigmoidally curved, 1–1·1 cm. long, the beak about equalling the cells, connective produced at the base into a triangular dorsal and a bifid ventral appendage; anthers of imperfect stamens empty, subulate,

slender, 4–5 mm. long, curled at the apex, appendaged at the base with a descending triangular bilobed membrane and 2 slender erect horns. *Ovary* enclosed in the calyx, 3–4 mm. long, connected with the disk by 4 vertical septa forming 4 cavities to receive the anthers before expansion, 4-celled, crown slightly domed; style linear, flattened, 1·7 cm. long, curved to bring the stigma to one side. *Fruit* subglobose, filling the persistent calyx, 7 mm. long.

Martaban, Chappedong Hill, *Wallich* 4082; Tenasserim, *Helfer* Kew Distribution No. 2290; Mergui, *Griffith* Kew Distribution No. 2289; S. Tenasserim, Kallinkwan chaung, 200 ft., flowers and fruit Feb., *C. E. Parkinson* 1691; banks of Tenasserim River, sea-level, Feb., *C. E. Parkinson* 1953.

Randia uranthera *C. E. C. Fischer* [Rubiaceae]; *R. sootapensi* Craib affinis, foliis majoribus, floribus majoribus, antheris longioribus caudatis differt.

Tree 20 ft. high; " stem dark grey." *Leaves* coriaceous, linear- to elliptic-lanceolate, long-acuminate, base acute, 13–18 cm. long, 2·75–5·75 cm. wide, quite glabrous, midrib raised above, prominent below, primary nerves 5–7 pairs, arched, slightly raised on both surfaces; petioles rather stout, 0·6–1 cm. long; stipules triangular, acute, 3 mm. long, early deciduous. *Flowers* in fascicles in the upper axils, sessile in pairs; peduncles very short, glabrous or appressed hairy; bracteoles 2, opposite, broadly ovate, acute, appressed hairy and ciliate. *Receptacle* terete, 0·9–1 cm. long, 3 mm. diam., appressed hairy. *Calyx* shortly appressed hairy without, densely clothed with longer appressed stiff rufous hairs within, tube 4–5 mm. long, lobes 5, triangular, cuspidate, 2·5 mm. long. *Corolla* glabrous; tube striate without when dry, 6–7 cm. long, about 2 mm. diam. at base, very gradually widened upwards to near the apex and then abruptly funnel-shaped and over 1 cm. diam. at the mouth; lobes 5, oblong, obtuse or subacute, up to 2·5 cm. long and 1·5 cm. wide. *Stamens* 5, in the mouth of the corolla and partly exserted; anthers linear, apex obtuse with the connective shortly excurrent, gradually narrowed downwards into pointed tail, 2·3 cm. long, attached at the centre by a very short filiform filament. *Ovary* enclosed in the receptacle, crown flat; style filiform expanding into a spindle-shaped stigma 1·2 cm. long half of which is exserted from the corolla. *Fruit* not seen.

Tavoy, Ba Wa Reserve, Feb., *Ba Pe* per *C. E. Parkinson* 8108, " Flowers white," apparently fragrant.

var. **minor** *C. E. C. Fischer.*

Differs from the type as follows: *Leaves* elliptic, 16–24 cm. long, 3·75–7·25 cm. wide; stipules broadly triangular. *Receptacle* 0·6 cm. long. *Corolla* tube 3–3·5 cm. long; lobes broadly ovate or suborbicular, obtuse, 1·6 cm. long, 1·2–1·4 cm. wide. *Stamens* 1·2 cm. long, not so distinctly tailed.

Mergui. Tenasserim Range, 250 ft., Feb., *Sukoe* per *C. E. Parkinson* 7627, " Flowers white, outside pinkish, fragrant."

Symplocos Sukoei *C. E. C. Fischer* [Symplocaceae]; *S. Maingayi* Benth. affinis, ramulis et inflorescentia cinereo-puberulis, foliis majoribus, corollis maturis externe fere glabris, tubo staminali longiore differt.

"*Tree* 70 ft. high; stem grey with white patches"; branchlets terete, shallowly sulcate, minutely grey-puberulous upwards, youngest twigs rather densely ashy-puberulous. *Leaves* chartaceous elliptic-oblong or -obovate, apex acute or obtuse, base narrowed, slightly inequilateral, 13–19 cm. long, 5–8 cm. wide, midrib and 6–7 pairs of arched primary nerves, which anastomose well within the entire margin, slightly impressed above, prominent below, glabrous on both sides except the minutely puberulous midrib and primary nerves beneath; petioles shallowly channelled above, pubescent, 5–8 mm. long. *Inflorescence* in axillary few-flowered cymes; rhachis shallowly furrowed when dry, up to 2 cm. long, fuscous- or ashy-felted; pedicels very short; bracteoles minute, ensiform, ashy-felted. *Receptacle* 3–4 mm. long, sulcate when dry, felted with ashy tomentum. *Calyx* fleshy, continuous with the receptacle, felted with ashy tomentum without, glabrous within; tube 2 mm. long; lobes 5, hemispheric, ashy-ciliate, 1 mm. long. *Corolla* fleshy, white (reddish-brown when dry), minutely puberulous on both surfaces except the inside of the lobes; tube cylindric, 2–2·2 cm. long, 1·5 mm. diameter; lobes 5, ligulate, apex rounded, channelled within, 1·5–1·75 cm. long. *Staminal tube* on the mouth of the corolla tube, cylindric, yellow, about 1 cm. long, mouth denticulate; anthers numerous on the inner face and the mouth of the tube, oblong, 1 mm. long, apiculate. *Ovary* inferior, sunk in the receptacle and very shortly protruded above it, the free part conical, densely ashy-hairy, 3-celled; ovules solitary in each cell, elongate, pendulous; style filiform, exserted 2·5 mm. beyond the staminal tube, diminishingly ashy-hairy from base upwards, the exserted portion minutely ashy-puberulous; stigma capitate. *Fruit* not seen.

Mergui, Maliwun, Nalechaung, 450 ft., flowers in April, *Sukoe* per *C. E. Parkinson* 7776. "Flowers sweet-scented."

Alstonia rostrata *C. E. C. Fischer* [Apocynaceae]; *A. angustilobae* Miq. affinis, foliis caudato-acuminatis subtus haud pallidis, lobis calycis et corollae suborbicularibus differt.

Tree up to 100 ft. high and 4 ft. girth; bark brownish, furrowed, soft; branchlets brown, glabrous; twigs in whorls of 3 or 4; sap milky. *Leaves* opposite or in whorls of 3–4, elliptic-oblong, apex rather abruptly obtusely caudate-acuminate, base cuneate and shortly decurrent, quite glabrous, shining above, 8–15 cm. long, 3–5 cm. wide, midrib raised below, primary nerves 30–50, nearly horizontal and straight to near the margin and there united by a submarginal vein, distinct above, very slightly raised below, margins slightly revolute and waved; petioles flattened, 1·5–3 cm. long. *Inflorescence* of whorled terminal or subterminal panicles shorter than the leaves; rhachis 2–8 cm. long, branches whorled 3–4 mm.

long, pedicels reddish, glabrous; bracts and bracteoles minute, narrowly ovate, acute. *Calyx* reddish, 2 mm. long, tube cup-shaped; lobes hemispheric, 0·5 mm. long, puberulous on both sides, margins whitish, minutely ciliate. *Corolla* hypocrateriform, white, fragrant, tube cylindric, 6 mm. long, glabrous except for minute pubescence near the top outside and a band of deflexed white hairs below the anthers within; lobes suborbicular over-lapping to the left, 4 mm. long, whitish-puberulous on both sides, densely white-hairy at the base within. *Stamens* inserted about the middle of the corolla tube, included; filaments very short, filiform, anthers linear-subulate, acuminate, base rounded, free from the stigma, 1·5 mm. long. *Ovary* 2 mm. long, 2-fid, united by the style; style filiform, 2 mm. long, oblong at the apex, stigmas 2, linear-lanceolate, apex reaching to about the middle of the anthers. *Follicles* narrowly subulate, terete, up to 20 cm. long and 1·25 cm. diam., apex blunt, valves woody, glabrous, when dry brown and longitudinally wrinkled without, whitish and smooth within. *Seeds* numerous, oblong, flattened, rounded at both ends or subtruncate at one end and shortly obtusely narrowed at the other, 1 cm. long, 3–4 mm. wide, rugulose and with a median longitudinal rib on each face, comose with brown silky hairs up to 2·2 cm. long at each end and for a short distance down the sides.

Thaton, Yatheytaung, 2500 ft., flowers March, *P. Chin* per *C. E. Parkinson* 6536 (type), vernacular name *Taung-ma-yo*; Mergui, Victoria Point, 75 ft., flowers Jan., *Sukoe* per *C. E. Parkinson* 6297; fruit March, *Sukoe* per *C. E. Parkinson* 7684 (type for fruit).

Beaumontia (Amalocalyx) rosea *C. E. C. Fischer* [Apocynaceae]; *B. shanicae* MacGregor et Smith affinis, foliis latioribus paucinerviis, floribus minoribus, corollae lobis tubo brevioribus distincta.

Climber; bark fibrous; twigs softly tomentose; sap milky. *Leaves* broadly elliptic, sometimes broadest a little above the middle, apex abruptly shortly cuspidate, base acute, up to 25 cm. long and 15 cm. wide, when young silvery tomentose, later thinly pubescent above (more densely on the nerves), thinly tomentose below, midrib impressed above, prominent below, primary nerves 5–8 pairs, rather regular, anastomosing with a wide loop well within the slightly undulate margin; petioles channelled above, 2·5–3·5 cm. long, pubescent. *Cymes* many-flowered, shorter than the leaves; rhachis and its branches stout, brownish-tomentose; pedicels 1·5–2·5 cm. long, brownish-tomentose, bracteoles linear, 2·3 mm. long, tomentose, deciduous. *Sepals* nearly free, ovate-lanceolate, subacute, 1–1·4 cm. long, thinly fuscous-tomentose on both faces. *Corolla* widely campanulate from a short cylindric base, 3–4 cm. long, light pinkish, whitish-pubescent without, glabrous within except the lobes; cylindric base 5–7 mm. long, 2–3 mm. diam.; lobes 5, semicircular, subacute, 0·8–1·3 cm. long, with short rhomboid erose lobules between, shortly white-hairy within. *Disk* annular,

5-lobed, shorter than the ovary, glabrous, mouth white-ciliate. *Stamens* on the mouth of the cylindric base of the corolla, included; filaments about 1 cm. long, flat, basal half expanded, densely white-hairy, upper glabrous; anthers sagittate, dorsally white-hairy, finely acuminate, 8–9 mm. long including the finely subulate tails. *Ovary* cushion-shaped, 2 mm. long, densely white-hairy; style densely white-hairy; stigma oblong. *Fruit* not seen.

Mergui. Maliwun, Bausanpan, 50 ft., flowers April, *Sukoe* per *C. E. Parkinson* 7751. Vernacular name: *Mwai kyan* (Siamese).

Dischidia lancifolia *Ridl.* (non *Merr.*) [Asclepiadaceae].

Known from Indo-China.

Mergui, Lenya Valley, flowers Feb., *R. N. Parker* 2712.

Loranthus grandifrons *King* [Loranthaceae].

Known from the Malay Peninsula and Sumatra.

Mergui, Maliwun, 300 ft., flowers Dec., *Sukoe* per *C. E. Parkinson* 6251. Leaves up to 10·5×5 inches.

Disporum acuminatum *C. H. Wright* [Liliaceae-Uvularieae]; *D. Leschenaultiano* D. Don affine, foliis oblongis longe acuminatis differt.

A large glabrous *herb*. *Leaves* oblong, long acuminate, papyraceous, 13–22 cm. long, 3–7 cm. wide; primary nerves about 3, secondary numerous; petioles 1 cm. long. *Raceme* terminal, few-flowered; pedicels 2 cm. long. *Perianth*-segments lanceolate, acuminate, 2·4 cm. long, 2 mm. broad at the base; basal appendage 5 mm. long, above rounded-cucullate. *Filaments* subulate, 2·2 cm. long; anthers dorsifixed, 6 mm. long. *Ovary* subglobose, loculi many-ovuled; style robust, cylindric, 7 mm. long, with 3 recurved branches 3 mm. long.

Myitkyina District, Nawraw chaung, Dec., *C. E. Parkinson* 1871.

This species is allied to *D. Leschenaultianum* D. Don, which differs in having broadly ovate leaves, not so long acuminate, and more primary nerves. The leaves of *D. acuminatum* are very thin and their nerves not very prominent; the plant is described by Mr. Parkinson as a "herbaceous undershrub."

LVI.—NOTES ON BLASTUS COGNIAUXII AND TWO ALLIED SPECIES. G. H. Spare.

When the Indo-Chinese specimens of *Blastus* (Melastomataceae) in the Herbarium were being examined recently, it was found that those named *B. Cogniauxii* were quite distinct from the Bornean plants so-named. This discovery led to a thorough examination of all the material under that name.

Blastus Cogniauxii Stapf was first published in Hooker's Icones Plantarum (1895, t. 2311), when it was transferred from the genus *Ochthocharis*. The plant was first described by Cogniaux in De Candolle's Monographiae (vii. p. 481) under the name *O. parviflora*,

and on its transference to *Blastus* a new specific epithet had to be found because a *B. parviflorus* Triana already existed. The true *B. Cogniauxii* has so far been found only in Borneo, the type being *Beccari* 1403, from Sarawak.

One of the Indo-Chinese sheets bears the manuscript name *Blastus eglandulosus* Stapf, which name, it appears, was never published. A full description is given below. The plant described by Guillaumin in H. Lecomte's Flore Gén. Indo-Chine (ii. p. 898) as *B. Cogniauxii* is *B. eglandulosus* Stapf. The type specimen of *B. eglandulosus* Stapf (*Balansa* 3517) is referred by Cogniaux in De Candolle's Monographiae to *B. cochinchinensis* Cogn., from which it differs considerably.

The *B. Cogniauxii* of King in the Journal of the Asiatic Society of Bengal (lxix. i. p. 13), and of Ridley in the Flora of the Malay Peninsula (i. p. 773), is also distinct and is described below as a new species under the name of *B. caudatus*. The three species concerned may be distinguished as follows :—

Leaves glandular :

Leaves caudate-acuminate, buds very acute, petals ovate, caudate-acuminate—Malay Peninsula.....*B. caudatus.*

Leaves acuminate, buds almost obtuse, petals ovate, acute—Borneo.....*B. Cogniauxii.*

Leaves not glandular, petals orbicular, caudate-acuminate—Indo-China.....*B. eglandulosus.*

Blastus eglandulosus *Stapf* MS., sp. nov. ; a *B. Cogniauxii* Stapf foliis floribusque eglandulosis, antheris longioribus, stylo longiore, ovario oblongo, differt.

Frutex gracilis, ramosus, glaber, caulibus leviter striatis. *Folia* ovata, obtuse acuminata, basi subito angustata, usque ad 11 cm. longa et 4 cm. lata, tenuia, supra glabra vel glabrescentia subtus glabra vel nervis primariis parce pilosa, nervis primariis 5, intramarginalibus tenuibus, margine vix denticulato vel undulato ; petioli 1–1·5 cm. longi, graciles glabrescentes. *Paniculae* axillares et terminales, graciles, glabrae, 2–3 cm. longae ; pedicelli 1–2 mm. longi ; bracteae nullae ; alabastra valde acuta. *Receptaculum* manifeste quadrangulare, glabrum. *Calycis* lobi parvi obtusi vix 1 mm. longi eglandulosi. *Petala* erecta orbiculata, caudato-acuminata, glabra, 1·5–2 mm. longa, alba (ex Eberhardt). *Stamina* 6 mm. longa ; filamenta eglandulosa ; antherae valde acutae eglandulosae, quam filamenta parum longiores. *Ovarium* oblongum ; stylus gracilis, 8 mm. longus. *Capsula* oblonga, glabra, 3 mm. longa.—*B. cochinchinensis* Cogn. in DC. Monog. Phanerog., vii p. 476 quoad pl. Balansae. *B. Cogniauxii* Guillaumin in Lecomte, Fl. Gén. Indo-Chine, ii. p. 898, non Stapf.

INDO-CHINA. Tonkin, Forests of Mount Bavi, 1000 m., *Balansa* 3517 (type) ; Annam, Phu Tho, *Eberhardt* 5070 ; Laos, Paklai, *Thorel* 3540 (type of fruit).

Blastus caudatus *G. H. Spare*, sp. nov. ; a *B. Cogniauxii* Stapf petalis acuminatis, antheris brevioribus acuminatis, alabastris acutis, foliis caudato-acuminatis differt.

Frutex gracilis, ramosus, caulibus teretibus levibusque, junioribus dense glanduloso-furfuraceis stramineis. *Folia* ovato-lanceolata, caudato-acuminata, basi acuta, 5–25 cm. longa, 1–6 cm. lata, tenuia, supra glabra vel pubescentia, subtus glandulis luteis vel croceis instructa, nervis primariis 5 dense glandulosis, intramarginalibus tenuibus, margine vix denticulato ; petioli 0·5–2 cm. longi, graciles, glandulosi. *Paniculae* axillares et terminales, graciles, glandulosae, 1·5–3 cm. longae ; pedunculi 1–5-flori ; pedicelli usque ad 1 mm. longi ; bracteae ante anthesin deciduae ; alabastra valde acuta. *Receptaculum* leviter quadrangulare vel globosum, dense glandulosum. *Calycis* lobi parvi suborbiculares acute denticulati vix 1 mm. longi, glandulosi. *Petala* erecta, ovata, caudato-acuminata, glabra, marginibus membranacea, 1·5–2 mm. longa, lutea (ex Kunstler et Ridley). *Stamina* 3 mm. longa ; filamenta glandulosa antheris subaequilonga ; antherae ovato-lanceolatae, obtuse acuminatae, loculis basi divaricatis, basibus glandulosis. *Ovarium* globosum ; stylus gracilis, 5–6 mm. longus. *Capsula* globosa, 2 mm. longa, matura glabra.—*B. Cogniauxii* King in Journ. As. Soc. Beng. lxix. i. p. 13, et Ridl. Fl. Mal. Penins. i. p. 773, non Stapf.

Malay Peninsula. Perak, Goping, *King's Collector* 553 (type), *Wray* 2984 : Kelantan, Chaning, *Ridley* : Pahang, Teku River, Gunong Tahang, *Haniff and Nur* 8060 ; Telon, *Ridley* 13549; Kuala Lipis, *Machado* 11587 : Selangor, Bukit Tuku, *Ridley* 7304, Ginting Bidai, *Ridley* 7328.

LVII.—NOTES ON AFRICAN GRASSES: XI.*

C. E. Hubbard.

A New Genus of Grasses from Bechuanaland.

In a collection of grasses recently received from the Division of Plant Industry, Pretoria, for comparison, a panicoid grass which bore a superficial resemblance to certain species of *Digitaria*, was included. It differed markedly, however, from that genus in the structure of its spikelets, but clearly belonged to that group of genera which has been segregated by Dr. Stapf† as the *Digitariastrae*. The name *Megaloprotachne* is proposed for this grass on account of its large well-developed lower glume, a character which serves to separate it from all allied genera. The genera of the *Digitariastrae* are characterised by the lemma and palea of the fertile floret being cartilaginous-indurated but not rigid at maturity, and by the margins of the former being more or less hyaline and flattened against the back of the palea. This group, together with certain other genera of the *Paniceae*, has been studied in detail by Mrs. A. Chase.‡ The genera given by her as having

* Continued from *K.B.* 1929, p. 263. † Prain, Flora of Tropical Africa, ix. 13 (1917). ‡ Proc. Biol. Soc. Wash. xix. 183–192 (1906) and xxiv. 103–159 (1911).

the above type of fertile floret are the following :—*Leptocoryphium* Nees, *Anthaenantia* P. Beauv., *Valota* Adans. (*Trichachne* Nees), *Digitaria* Hall. (*Syntherisma* Walt.), *Leptoloma* Chase, *Chloridion* Stapf, and *Acritochaete* Pilger. To these Dr. Stapf has added *Alloteropsis* Presl. The last three genera differ from the new genus in having slender-awned spikelets, whilst the first five may be distinguished in having minute or obsolete lower glumes.

The genera with which *Megaloprotachne* shows greatest affinity are *Anthaenantia* and *Valota*. From both it differs in its large lower glume, which is as long as the spikelet, and also in the shape of the spikelets. In *Anthaenantia* they are obovoid, in *Valota* lanceolate. In addition the fertile floret of *Anthaenantia* has a boat-shaped lemma and the spikelets are arranged in narrow panicles. *Valota* has a somewhat similar type of inflorescence to that of our genus, the spikelets being arranged in secund spike-like racemes ; it has, however, a sterile lower floret which is reduced to the lemma, and a lanceolate fertile floret.

Leptoloma may be distinguished by its different type of inflorescence, the spikelets being sparsely scattered on the branches of a diffuse panicle. *Leptocoryphium* has panicled spikelets, the lower glume absent, the lower floret sterile and reduced to the lemma, and the fertile floret open at the apex due to the hyaline tip of its lemma.

The only genera amongst the African grasses with which our new genus is likely to be confused are *Digitaria* and *Urochloa*. From the former it may be readily distinguished by its large lower glume and male lower floret with well-developed palea, and from the latter by its different type of fertile floret, that of *Urochloa* having the lemma crustaceous, very obtuse, mucronate at the apex, and with firm narrowly involute margins.

I am greatly indebted to Dr. Stapf for numerous suggestions in working out the relationships of this new genus.

Megaloprotachne *C. E. Hubbard*, gen. nov., affinis *Anthaenantiae* P. Beauv. et *Valotae* Adans. ; ab utroque genere gluma inferiore spiculam aequante, spiculis lanceolato-ovatis vel lanceolato-ellipticis, ab illo spiculis in racemis spiciformibus dispositis, gluma superiore trinervia, anthoecio supero plano-convexo, ab hoc anthoecio supero elliptico acute acuminato differt.

Spikelets lanceolate-ovate to lanceolate-elliptic in dorsal view, acute or acutely acuminate, semi-elliptic-oblong or semi-ovate-oblong in profile, flat in front, convex on the back, falling entire from their pedicels, paired, secund and abaxial on the triquetrous rhachis of slender spiciform racemes ; lower floret ♂, upper ♀. *Glumes* dissimilar ; lower as long as the spikelet, involute and acute at the tip, oblanceolate-oblong and rotundately obtuse when flattened, thinly membranous except for the hyaline nerveless tip, finely 5-nerved with the lateral nerves approximate, glabrous and

very smooth ; upper about two-thirds to three-quarters the length of the spikelet and closely appressed to the upper floret leaving the sides of the latter exposed, lanceolate to ovate-lanceolate, obtuse, thinly membranous with hyaline tip and margins, 3-nerved, densely pilose between and outside the lateral nerves. *Lower floret* : valve ovate or elliptic, acutely acuminate, nearly as long as the spikelet, flattened on the back and with very narrow inflexed margins, the latter membranous, the remainder hyaline, 5-7-nerved with the lateral nerves very close together, long-pilose on the inflexed margins ; valvule ovate- to elliptic-oblong, subacute, hyaline, 2-keeled, with the keels narrowly winged. *Upper floret* : valve elliptic and acutely acuminate in dorsal view, semi-elliptic-oblong in profile, chartaceous with narrow flattened hyaline margins, 3-nerved, glabrous and smooth, at first whitish but becoming chestnut-brown at maturity except for the hyaline margins ; valvule as long as the valve, 2-nerved. *Lodicules* 2, minute. *Stamens* 3 ; anthers linear. *Ovary* glabrous ; styles free, terminal, long, exserted at the apex ; stigmas plumose. *Caryopsis* elliptic, dorsally compressed, plano-convex ; hilum subbasal ; scutellum half the length of the caryopsis.—An annual grass ; ligules membranous, ciliolate ; leaf-blades linear, flat ; racemes more or less distant on a common axis ; rhachis triquetrous, flexuous ; pedicels unequal ; spikelets loosely appressed and more or less imbricate.

Species 1, in Bechuanaland.

M. albescens *C. E. Hubbard*. *Culms* geniculately ascending and rooting from the lower nodes, up to 75 cm. high, moderately stout, terete or grooved on one side, simple or branched from about or above the middle, glabrous and smooth, up to 9-noded, with the internodes 4·5–8 cm. long. *Leaf-sheaths* slightly longer to slightly shorter than the internodes, loose, terete, striate, pilose or villous at the nodes, the remainder softly pubescent except for the uppermost which is glabrous and smooth ; ligules truncate, about 1–1·5 mm. long ; blades linear from an equally wide base, finely acute, up to 20 cm. long, 5–6 mm. wide, flat, finely pubescent or the upper glabrous except for the minutely asperulous primary and secondary nerves, margins yellowish, crinkled and cartilaginous. *Inflorescence* up to 16 cm. long, laterally exserted from the uppermost leaf-sheath, more or less contracted, composed of 7–9 racemes ; primary axis slender, flexuous, up to 5·5 cm. long, finely grooved, overtopped by the racemes ; racemes 6–12·5 cm. long, suberect, simple or rarely with short branchlets at the base bearing 2 spikelets, flexuous, solitary, rarely paired, 0·5–1·5 cm. apart ; rhachis 0·3 mm. wide, pubescent at the base, the remainder glabrous and smooth ; pedicels unequal, both very slender, more or less appressed, angular, glabrous and smooth, with minutely discoid tips, one up to 1 mm. long, the other straight or more often flexuous, up to 5 mm. long. *Spikelets* 4–4·5 mm. long by 1·3–1·5 mm. wide, whitish. *Lower glume* 4–4·5 mm. long ; upper 3·3–3·5 mm. long, pilose with short

very fine appressed white hairs. *Valve of lower floret* 3·5–3·75 mm. long, with 3 small glands on each margin, here long and appressedly pilose; valvule 3·2–3·5 mm. long. *Valve of upper floret* 3 mm. long. *Anthers* 1·6–2·5 mm. long. *Caryopsis* pale, almost 2 mm. long.

South Africa. Bechuanaland: Kuruman; Vaal Kameel, 25th March, 1928, *Pole Evans* 2075.

LVIII.—MISCELLANEOUS NOTES.

Botanical Expeditions: Somaliland.—Three letters have been received from Mr. C. L. Collenette, the botanist who is accompanying the Joint British-Italian Boundary Commission (*K.B.* 1929, pp. 238, 239). The first letter, written on the 26th of August, announced his arrival at Berbera, and gave details of the preparations incidental to the Expedition.

Berbera, where the thermometer had not been below 90° F. for a fortnight, with vegetation stripped by locusts and a sandstorm blowing every day for some twelve hours, offered little opportunity for botanizing. A visit to Hargeisa, a hill station 108 miles south-west of Berbera, created a more favourable impression of the country.

The second letter, dated the 24th September, was written from Baran, 3000 ft. alt., about half way down the eastern boundary of British Somaliland. This he describes as a broad rocky valley, containing the only water in the district—two pools in the dry bed of a stream—and showing a good sample of the scanty vegetation, which seems to vary but little for a good many miles round.

The locusts, to which he referred in his previous letter, covered everything along his journey up to Baran, but at that altitude they had largely disappeared and the vegetation was recovering. Although there had been a few showers, an important item in a district with so small a rainfall, the number of plants in flower was very disappointing. His collections, which included the grasses, had reached to over eighty numbers, and possibly represented some 30 per cent. of the flora of the district. He remarks that it pays to walk over almost every yard of the ground, as the rarer plants are often present in one small area and do not appear elsewhere. Sometimes a single shrub is found in flower, while all other plants of the same species in the neighbourhood are bare and leafless.

A general outline of the chief physiognomic types of vegetation has been attempted, but as so many of the plants were leafless it has not yet been possible to name the principal constituents. The grasses and evanescent herbaceous ground vegetation are only just beginning to appear after the first showers.

He mentions that he hopes to visit the Al Hills, some 60 to 70 miles north of Baran, which ascend to 6000 ft. No botanist has ever visited these hills, and the highest zone of the last 1000 ft. is reported to be covered with green vegetation, in marked contrast to the burnt-up country of the lower zones.

In a subsequent letter of the 1st October he describes the precautions he had to take to obtain flowering specimens of bulbous plants. These were noted when in bud and little protective stone barricades were built round each plant. Only thus could the flowers be saved from goats and wild animals.

Index Kewensis, Supplement VII.*—The monumental Index Kewensis and its successive Supplements are recognized as an indispensable part of the equipment of any important botanical institution, affording as they do a ready means of reference to the names, the first places of publication, and geographical distribution of all the known genera and species of Flowering Plants published from the year 1753 down to the present day. In works of this character, the prompt appearance of the successive issues is of great importance, and it is therefore highly gratifying that new arrangements mentioned in the preface have made it possible to publish the seventh Supplement, which covers the period 1921-25, only three years after the appearance of the sixth, which covered the preceding quinquennium, 1916-1920.

It may not be out of place to mention here a few of the many ways in which the Index is of service. If any question arises as to the correct or original way of spelling a botanical name, the original spelling can be obtained from the Index, though obvious errors are of course corrected. Those interested in horticulture or economic botany may find out the native countries of the plants with which they are dealing and verify the names by means of comparison with the original descriptions cited in the Index. To the research worker in systematic botany of the Flowering Plants, the Index and especially its Supplements are absolutely indispensable, in view of the widely scattered nature of the literature: in illustration of this fact, it may be mentioned that about four hundred different periodicals were examined during the preparation of the present Supplement.

As each successive Supplement has been prepared, it has been the aim of those responsible to adopt any practicable modifications which would increase the general usefulness of the Index without altering its format. From the third Supplement onwards, lists of addenda, which were found to be very troublesome to consult, have been omitted, any new or corrected entries being inserted in the next issue. From the fourth Supplement, the dates of publication, so important for purposes of priority, have been inserted in all cases. The geographical information supplied is now much more detailed, the precise country or province being stated wherever practicable.

*Index Kewensis Plantarum Phanerogamarum Supplementum Septimum nomina et synonyma omnium generum et specierum ab initio anni MDCCCCXXI usque ad finem anni MDCCCCXXV nonnulla etiam antea edita complectens ductu et consilio A. W. Hill confecerunt Herbarii Horti Regii Botanici Kewensis Curatores. Oxonii e prelo Clarendoniano MDCCCCXXIX. Pp. 260. 4to. Price £3 15s.

Where new names are based on previously published ones, the latter are cited so that the connection between the two names may be apparent.

A novel and valuable feature incorporated in the present Supplement is a separate list of new genera, arranged under their families. This enables a botanist who is interested in one particular family, such as Orchidaceae for example, to see at a glance what new genera belonging to this family are contained in the Supplement, information which is unobtainable from other sources without a prohibitive expenditure of time.

The present Supplement contains 260 pages, as compared with 222 in Supplement VI, the increase being due partly to the increased activity of botanical research during the period, and partly to the inclusion of many earlier references which had been generally overlooked owing to their having been published in obscure periodicals or books. As regards the general style and typography it may suffice to say that the present volume worthily upholds the high traditions of the Clarendon Press.

The preface is here reproduced.

MONITUM

Hoc septimo Indicis Kewensis Supplemento inclusa sunt non modo quot nova nomina inter quinquennium 1921-5 sunt edita, sed multa etiam quae ex Indice ipso et Supplementis I—VI erant omissa.

Nomina Familiarum quae Generum nomina singula sequuntur e libro ' Genera Siphonogamarum ' auctoribus Dalla Torre et Harms sumpta sunt ; sed sicubi Familia alia datur in libro ' Genera Plantarum ' auctoribus Bentham et Hooker, huius Familiae alterius nomen est additum.

Quo maiori sit usui libellus eis qui singulis Familiis operam dant, hoc primum Supplemento tabulam dedimus nominum genericorum novorum in eo inclusorum ; haec sub Familiis propriis sunt disposita.

Bello illo Magno factum erat ut Supplementa V et VI serius iusto ederentur : nos meliori fortuna usi opus maturare et hoc septimum Supplementum tertio post sextum editum anno in lucem proferre potuimus. Quo in genere multum adiuvit quod Herbario Kewensi accessit custos M. L. Green, quae Indicis nostri parandi a Doctore T. A. Sprague per hos duos et viginti annos summa diligentia navatum opus susciperet.

ARTHUR W. HILL

Datum ex horto Regio Kewensi
mense Maio A.S.MCMXXIX.

Council for Scientific and Industrial Research, Australia.* —We learn from the Journal of the Council that rapid progress had been made with the building of the laboratories of the Division of Economic Entomology at Canberra. The Empire Marketing Board has agreed to contribute £25,000 on a £1 for £1 basis with the Council towards the capital cost of equipping the Division with its necessary laboratories, insectaries, apparatus, small field stations, etc., and also to contribute on similar terms an amount of about £37,000, spread over a period of five years, towards the running expenses of the Division.

The building has been erected in such a way as to allow for the addition of a central administrative building and a corresponding laboratory building for the Division of Economic Botany. The central building that has been proposed will contain the administrative offices of both Divisions and also a common library and rooms for a museum, herbarium and records.

We also note that at the request of the Government, the Council has formed a Committee consisting of Sir David Masson (Emeritus Professor of Chemistry, University of Melbourne) (Chairman), Sir Henry Braddon (a member of the Senate of the University of Sydney), Sir Thomas Lyle (Emeritus Professor of Natural Philosophy, University of Melbourne), Sir Robert Garran (Solicitor-General), and Mr. A. J. Gibson (late Professor of Engineering, University of Queensland), with the members of the Executive as *ex officio* members, to report on the establishment of a University of Canberra, particularly from the point of view of its relation to the scientific work of the Council to be carried out in that place, and also in relation to the scientific work of other institutions in Canberra. From this point of view, the possibilities of the establishment of a post-graduate research University are being explored.

Since this number of the journal was published the welcome news has been received from the Council that the Federal Parliament has approved the erection of the Botanical building, which will include the National Herbarium at Canberra. It is hoped that the building may be completed within the next twelve months.

Botanical Magazine.—The second part of Volume cliii (1927) contains the following plant portraits :—

Rhododendron calophytum Franchet (t.9173), discovered in 1869 by Père G. David in Western Szechuan ; *Gaultheria Veitchiana* Craib (t.9174), with turquoise-blue fruits, also a native of W. Szechuan where it was discovered by David ; *Cyrtanthus rhododactylus* Stapf (t.9175), a new species from South Africa, but at present only known from cultivated specimens ; *Siphonosmanthus suavis* Stapf (t.9176), a new genus separated from *Osmanthus* on the

* Commonwealth of Australia, Journal of the Council for Scientific and Industrial Research, August 1929, Vol. 2, No. 3.

length of the corolla tube and high insertion of the stamens. The genus includes *S. Delavayi* Stapf and *S. suavis*, both of which species were doubtfully placed under *Osmanthus* by Franchet and King respectively.

Acacia rhetinoides Schlechter (t.9177), the next illustration, is a well-known plant first collected by Dr. A. Behr near Adelaide, about 1847, and also found in Victoria by Robert Brown ; *Salvia caerulea* Benth. (t.9178), a fine blue *Salvia* from Eastern and South-Eastern Brazil and Paraguay, discovered by Sellow in S. Brazil about 100 years ago ; *Encyclia Mooreana* Schlechter (t.9179), a native of Costa Rica, the plant figured having been sent to Kew by Mr. C. H. Lankester ; *Cosmos diversifolius* Otto (t.9180), from Mexico, a plant which was first in cultivation at the Berlin Botanic Garden in 1835 and was sent thence to the Birmingham Botanic Garden. The plant figured was grown in the Botanic Garden, Cambridge.

Briggsia amabilis Craib (t.9181) is an interesting Gesnerad from N.W. Yunnan and is followed by a plate of *Potentilla nepalensis* Hook. (t.9182), a plant grown for many years in the Rock Garden at Kew. It is a native of the Outer Himalaya from Nepal to Hazara. The final plate depicts *Euonymus grandiflorus* Wall. f. *salicifolia* (t.9183), an attractive Spindle Tree from India, Upper Burma, and China.

Flora of the Cape Peninsula.*—Perhaps in no other part of the world can be found a small area with so rich a flora as the Cape Peninsula. From a phytogeographical standpoint its flora is of very great interest, for the peninsula is separated from the remainder of South Africa by a wide stretch of sandy dunes, the Cape Flats, which must have proved a serious barrier to the migration of species.

A complete flora of the area has long been and still is a desideratum. The foundation was well laid for it by the late H. Bolus and by H. A. Wolley-Dod, in their List of the Flowering Plants and Ferns of the Cape Peninsula, published as long ago as 1903. Mrs. Levyns has now gone a step further and provided a book whereby a visitor or student may learn the family and genus of any flowering plant in the area.

The system followed in Mrs. Levyns' " Guide to the Flora " is that of Engler, which, according to the author, " is more in accordance with natural relationships than the older systems of Bentham and Hooker." This was not Sir Joseph Hooker's view, and who knew more about relationships than Hooker ? As exemplified by the Cape Peninsula flora the weak points of the Engler system are particularly noticeable. It brings into juxtaposition such widely diverse families as the Peppers and Willows, the Nettles and

*A Guide to the Flora of the Cape Peninsula, by M. R. Levyns, with 199 Illustrations by Miss E. McCullough and the Author. Juta & Co., Ltd., Cape Town and Johannesburg, 1929, pp. xv. + 284, figs. 199. Price 15*s.* 6*d.*

Proteas, the *Polygalaceae* between the *Rutaceae* and *Euphorbiaceae* far away from their true relatives, whilst the *Cucurbitaceae* are placed between the *Dipsacaceae* and *Campanulaceae*. We fancy that the young South African student of botany will find it difficult to recognise any relationships between these families, to mention only a few. Fortunately the Peninsula harbours no Balsams (*Impatiens*), to puzzle him as to why they should be placed near the Horse-chestnuts, far removed from their natural position next the *Geraniaceae*, which are such an important element in the South African flora.

Keys to and descriptions of the families and genera are given, with short notes on habitat and the flowering period of the genus as represented on the peninsula. The work is illustrated by small black and white figures to the number of 199, which should prove of great value to the student, but some of these might have been made more helpful by the addition of a longitudinal section and other parts of the flower. The figure of *Podalyria calyptrata* hardly does justice to that beautiful shrub as I saw it around Kirstenbosch a year or so ago, whilst in that of *Kiggelaria africana* (p. 181) a fruiting twig is superimposed on the upper half of a figure representing a male shoot. Nevertheless the student will find this book very useful indeed for gaining a preliminary knowledge of the flora of the Cape Peninsula, and Mrs. Levyns is to be warmly congratulated on the publication of her work, which should serve to whet the appetite for something more. J. H.

Tapping Peru-Balsam.—Balsam of Peru, yielded by *Myroxylon Pereirae* Klotzsch, and used not only in perfumery and soapmaking, but also in medicine, is obtained from trees growing in the wild state in parts of Central America, chiefly on the Sonsonate Coast, San Salvador. The methods employed by the natives for extracting the balsam are crude and liable to cause severe injury to the tree, resulting often in death. To what extent trees occurring wild in this region will, in the future, be able to supply the demand for this balsam, it is impossible to estimate. On analogy with other plant products of commercial value that have in the first place been obtained only from the wild source but have subsequently become extensively cultivated, it does not seem unreasonable to assume that Peru-Balsam from cultivated trees might eventually largely supplement if not entirely displace that from the wild source in the markets of the world.

In this connection it is interesting to follow the results of experiments on tapping with Peru-Balsam trees at the Paramaribo Agricultural Experiment Station in Surinam. It would appear from a preliminary account of these experiments by Dr. Stahel *

* "Nieuwe Onderzoekingen over Perubalsem uit onze Koloniën." Berichten van de Afdeeling Handelsmuseum van de Kon. Vereeniging Koloniaal Instituut. No. 30, pp. 20 (Druk de Bussy, Amsterdam, 1927).

that trees over 20 years old are established at the Station. In 1917 and 1918 these trees were tapped according to the San Salvador method, but the wounds had not completely healed as late as 8 years afterwards and in many cases rotting of the wood had taken place or injury from termites had occurred.

The usual procedure for obtaining the resin in San Salvador is first to beat the trunk of the tree over a surface of approximately half a square foot in several different places with a round stone or other blunt instrument. This softens the bark, the outer portion of which is removed, leaving the inner portion still adhering to the wood. The surfaces so treated are then covered with pieces of cloth to absorb the exudation. After several days these exposed surfaces are heated by means of torches. This induces a more copious flow of balsam, which is again collected by means of the cloth. When exudation has again ceased cuts are made on the exposed surface which causes a further flow. After this the inner bark is removed leaving the wood exposed, from which balsam again exudes and is collected on a cloth as before. The rags are eventually boiled for some time in water, which causes most of the balsam to sink to the bottom of the vessel. When cool, the water, which contains many of the impurities that were mixed with the balsam, is poured off, and the balsam is poured into separate containers. Rope presses are used for extracting the remainder of the balsam from the cloths.

It was found at Paramaribo that wounds to the trunk of 1 cm. in width in place of the usual 10 to 20 cms. healed completely in less than 6 months. In arranging the tapping cuts the boles of the trees were divided into sections 30 cms. in depth and alternate sections only were tapped at any one time. The tapping cuts were made 0·8 cm. in width, being inflicted with a rectangular *Hevea* tapping knife, and ran parallel with the axis of the trunk at distances of 10 cms. from one another. It was only in a few instances that resin appeared in any of the incisions before burning, and then only in a very small quantity. Burning was done by means of a hot iron approximately the length and breadth of the incisions and resulted in a copious flow of balsam in 8 to 10 days from burning. As soon as the balsam began to flow a piece of cotton yarn was placed in each groove to collect the balsam and prevent it running down the side of the trunk. When the balsam had ceased flowing the pieces of yarn were collected and the balsam extracted with alcohol, accurate figures relating to yield per tree being desired in this instance.

After two months from burning, the wounds had almost closed as a result of active callus formation. The incisions were again burned, resulting in a further flow of balsam, and a third burning was given at the end of another two-month period. Healing after the third burning was much slower, and a period of 6 months had elapsed before callus growth became active and the wounds again healed.

It is considered that after three burnings the trees should be allowed to rest a year, to allow of complete healing, after which the other untapped areas can be worked, followed by another period of rest. With this method a continuous annual yield of 3 kgs. of balsam per tree, with 20-years old trees, is regarded as possible. In the Paramaribo experiments between 300 and 350 gms. of balsam was yielded per square metre of trunk surface by the larger trees, after three tappings. This worked out to 5 kgs. of balsam per tree.

It is admitted that this method of tapping involves considerably more labour than the crude method employed in San Salvador, and would result in higher tapping costs. It is, however, difficult to draw comparisons between the two methods, as one is applied to trees in the wild state and the other to cultivated trees.

The tree, which occurs either singly or in groups in its natural habitat, reaches an average height of 50 feet or more, and possesses a very spreading crown. The spacing recommended for plantation purposes is given as 40 to 45 feet, and light sandy soils are claimed to lead to better development of the trees than heavy or low-lying soils. F. N. H.

Sisal—Production and Preparation.*—This book, which is for the most part a compilation, should serve a very useful purpose in bringing together for those interested in Sisal the very scattered literature on the subject. In the first of the two Parts into which the book is divided a Chapter is devoted to sisal in each of the more important sisal-producing countries, eleven being dealt with. This is followed by a discussion on the subject of alcohol from sisal refuse, a proposed sisal planters' association, and other miscellaneous matter. Part II deals primarily with extraction and preparation of the fibre and illustrates in great detail the various types of machinery in use, figures of machines supplied by the leading makers being incorporated.

In the Introduction the author states that it was not intended to " bring together a scientific work on the subject," and the critical reader must, therefore, make due allowance when disposed to question occasional phrases such as " the bacteria of Panama disease." The appearance of " The Question of Panama Disease " as a sub-title on the title page of a work on Sisal is perhaps open to question. A compilation of this nature is necessarily no light task and the editor has every reason for satisfaction in having produced a work, the first of its kind, that should prove invaluable to those engaged in, or about to undertake, the cultivation and commercial production of Sisal. F. N. H.

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*" Sisal—Production and Preparation, comparative notes on other fibres. The question of Panama Disease." Edited by H. Hamel Smith. Messrs. John Bale, Sons and Danielsson, Ltd., 83-91, Great Tichfield Street, London, W.1, 1929, pp. 384, pl. 13, fig. 23. Price 21*s.* 0*d.* net.

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